

07-21-00

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UTILITY PATENT APPLICATION TRANSMITTAL

Address to: Box PATENT APPLICATION Commissioner for Patents United States Patent & Trademark Office Washington, DC 20231	Attorney Docket No.	VEI0319PUS
	Inventor(s) or Application Identifier: Darius J. Preisler	

1. This application entitled Occupant Protection System For Vehicle With Air Bag is:

- a. X A new application under 37 C.F.R. §1.53(b).
- b. A continuation divisional or continuation-in-part application under 37 C.F.R. § 1.53(b) of prior application Serial No. / filed on , entitled .

Application elements and other attached papers:

2. X Specification (incl. Claims and Abstract) [Total Pages 8]
3. X Drawings (informal X formal) [Total Sheets 2]
4. X Oath or Declaration
- a. X Newly-executed
- b. Copy from a prior application (37 C.F.R. § 1.63(d))
5. Incorporation By Reference: The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Item 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. This application is filed by fewer than all the inventors named in the prior application, 37 C.F.R. § 1.53(d)(4).
- a. **DELETE** the following inventor(s) named in the prior nonprovisional application:
- b. The inventor(s) to be deleted are set forth on a separate sheet attached hereto.

CERTIFICATION UNDER 37 C.F.R. § 1.10

I hereby certify that this UTILITY PATENT APPLICATION TRANSMITTAL and the documents referred to as attached therein are being deposited on the below date with the United States Postal Service in an envelope as "Express Mail Post Office to Addressee" addressed to: Box Patent Application, Commissioner for Patents, United States Patent and Trademark Office, Washington, D.C. 20231.

Express

Mail Label No. EL481657538US

Date of Deposit: July 20, 2000

Donna Blake
 (Type or print name of person mailing paper)

Donna Blake
 (Signature of person mailing paper)

7. Preliminary Amendment:

- a. ☐ A Preliminary Amendment is attached.
- b. ☐ Cancel in this application original claims _____ of the prior application before calculating the filing fee.
- c. ☐ Please amend the specification by inserting before the first line the sentence:
 "This is a
 ☐ continuation
 ☐ divisional
 of copending application(s)
 Serial number ☐ / _____ filed on _____."
- d. ☐ A Petition to Suspend Prosecution For The Time Necessary to File An Amendment (New Application Filed Concurrently) is attached.

8. Small entity status:

- a. ☐ A small entity statement is attached.
- b. ☐ A small entity statement was filed in the prior nonprovisional application and such status is still proper and desired.
- c. ☐ Is no longer desired.

9. Fee Calculation:

FOR	NUMBER FILED	NUMBER EXTRA	RATE	CALCULATIONS
TOTAL CLAIMS (37 C.F.R. § 1.16(c))	4 -20 =	0	X 18.00	0.00
INDEPENDENT CLAIMS (37 C.F.R. § 1.16(b))	2 -3 =	0	X 78.00	0.00
MULTIPLE DEPENDENT CLAIMS (if applicable) (37 C.F.R. § 1.16(d))			260.00	0.00
			BASIC FEE (37 C.F.R. § 1.16(a))	690.00
Total of above Calculations =				690.00
Reduction by 50% for filing by small entity (Note 37 C.F.R. §§ 1.9, 1.27, 1.28)				
Assignment Recordal Fee			40.00	40.00
TOTAL =				730.00

10. ☒ A check in the amount of \$ 730.00 is enclosed.
11. ☒ The Commissioner is hereby authorized to credit overpayments or charge the following fees (or any deficiency therein) to Deposit Account No. 02-3978:
- a. ☒ Fees required under 37 C.F.R. § 1.16.
- b. ☒ Fees required under 37 C.F.R. § 1.17.

12. Maintenance of Copendency of Prior Application

☐ A request for extension of time and the appropriate fee have been filed in the pending **prior** application (or are being filed in the prior application concurrently herewith) to extend the period for response until _____.

13. ☒ An Information Disclosure Statement (IDS) is attached, along with the following indicated attachments thereto:

a. ☒ Form PTO/SB/08 (1 sheet(s))

b. ☒ Copies of references cited

14. ☐ Certified copy of priority document(s)

15. ☒ Return Receipt Postcard

16. ☐ Other: _____

17. ☐ An Assignment of the invention to Patent Holding Company

a. ☒ is attached.

b. ☐ was recorded on _____ at Reel _____, Frame _____.

18. The power of attorney in the prior application is to:

_____	Name of Attorney of Record	_____	Reg. No.
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☐ The power appears in the original papers in the prior application.

☐ The power does not appear in the original papers, but was filed on _____.

☐ A new power has been executed and is attached.

19. Correspondence Address: Please address all future communications to:

David R. Syrowik,
 Brooks & Kushman P.C.,
 1000 Town Center, 22nd Fl.
 Southfield, MI 48075-1351
 Telephone: 248-358-4400; Fax: 248-358-3351

Respectfully submitted,



Date July 20, 2000

 Name: David R. Syrowik
 Registration No.: 27,956

☒ Attorney or agent of record
☐ Filed under Rule 34(a)

OCCUPANT PROTECTION SYSTEM FOR VEHICLE WITH AIR BAG

TECHNICAL FIELD

The present invention relates to a system of deploying an air bag such that the air bag is not obstructed upon deployment.

BACKGROUND ART

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Inflatable air bags for the protection of vehicle occupants are well known. Typically the passenger side air bag is hidden inside the instrument panel, concealed by an air bag cover. Inflation of the air bag occurs with great force and the air bag usually exits the instrument panel by impacting the cover and forcing it outward, potentially in the direction of the occupants. The consequences of this impact are twofold: first, deployment of the air bag can be inhibited, and second, the air bag cover can detach or break apart, often hurtling the cover or pieces of it toward the occupants.

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U.S. Pat. No. 5,460,401, issued on October 24, 1995 to Gans et al., describes a method to address the potential injury to occupants by providing an air bag cover that is limited in its movement by the presence of a flexible tether. One end of the tether attaches to the cover, the other end attaches to the panel edge or housing. Although the tether reduces the risk to occupants by restricting the outward motion of the cover, the cover is still thrust outward with great force and the potential for injuriously impacting the occupants has not been eliminated.

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U.S. Pat. No. 5,456,487, issued on October 10, 1995 to Daris et al., describes an instrument panel assembly that provides an air bag cover that consists of two hinged doors within the instrument panel. Both of the doors are designed to swing outwardly as the air bag is deployed. Although the outward movement of the doors is again restricted, the doors are still thrust outward with great force and body

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parts in close proximity to the doors—e.g., hands and wrists—could still be injuriously impacted.

U.S. Pat. No. 5,915,724, issued on June 29, 1999 to Daris, et al., describes an air bag cover assembly that provides an air bag cover with a single hinged door. The '724 patent provides a device that has the same limitations as that provided by the '487 patent. Although manufactured differently than a two-door hinged cover, the single-door cover still presents the same risk to the occupants as the two-door design.

U.S. Pat. No. 5,971,431, issued on October 26, 1999 to Wohllebe, et al., describes an air bag arrangement that provides a cover with a guide to direct movement of the cover. Upon deployment of the air bag, the air bag impacts the guide and a downward force component moves the cover to reveal an opening. The movement of the cover is limited by swing levers that restrain the cover from moving toward the occupant. This eliminates the problem of the cover propelling toward the occupant; however, the cover does not move until the guide is impacted by the air bag, and this could potentially inhibit the air bag deployment.

U.S. Pat. No. 6,024,377, issued on February 15, 2000 to Lane, Jr., describes an air bag restraint system, one embodiment of which provides a jaw-like air bag cover with side rails. Upon inflation of the air bag, a shaft is forced into the intersection of the side rails, causing a camming action which opens the jaws. Once open, the air bag deploys through the opening in the jaws. This design has the same shortcoming as the '431 patent; although the cover is not propelled in the direction of the occupant, the air bag must forcibly open the cover, and this could potentially inhibit the air bag deployment.

Another embodiment of the '377 patent overcomes the potential problem of inhibiting deployment of the air bag, but introduces the problem of a cover moving toward the occupant. This embodiment provides an air bag concealed within a sliding drawer. Upon receipt of a signal from a controller, gas is used both to inflate the air bag, and to propel the drawer forward which allows the air bag to

5 deploy through an opening at the top of the drawer. The system may have separate inflators -- that is, one for the air bag and one to force the drawer open—in which case they may work concurrently or sequentially, or a single inflator can serve both functions. Because the drawer is sliding toward the occupant, potentially with great force, the risk of injury to the occupant remains.

10 Accordingly, it is desirable to provide an improved system of allowing an air bag to deploy which overcomes the above referenced shortcomings of prior art air bag deployment systems. Specifically, it is desirable to provide a system of allowing an air bag to deploy without obstruction, such that the air bag need not impact the air bag cover, and therefore deployment is not inhibited. This eliminates the potential for occupant injuries caused by the propulsion of the cover or pieces thereof.

DISCLOSURE OF INVENTION

15 The present invention provides a system of allowing an air bag to deploy without obstruction. This avoids inhibition of the air bag as it deploys and allows it to fully deploy unimpeded, helping to ensure passenger safety. Moreover, this design eliminates outward propulsion of air bag covers and their debris, which can be propelled with great force, potentially causing injury to the occupants. The
20 air bag is normally deflated and contained within a housing in the instrument panel near the vicinity of the occupant's seat. As a result of vehicle impact, the air bag deploys through an opening in the instrument panel, inflating and leaving the housing as it deploys.

25 In one embodiment, the skin of the air bag covers an opening in the instrument panel, eliminating the need for a separate air bag cover. The skin of the air bag is flush with, and blends into, the surface of the instrument panel cover. Upon deployment, the air bag is completely unobstructed and this embodiment provides no covers to be propelled outward toward the occupants.

In another embodiment, the air bag cover is fixedly adhered to the air bag such that when the air bag is in its normally stored position, the cover is flush with, and blends into, the instrument panel cover. The cover is fixedly adhered to the air bag such that it will remain fixedly adhered upon deployment of the air bag.

5 The air bag is contained within a housing in the instrument panel such that the cover will be on the side of the air bag opposite the passenger when the air bag is in its fully deployed position.

Accordingly, an object of the present invention is to provide a system for allowing an air bag to deploy in a vehicle such that the air bag cover will not obstruct the air bag when the air bag deploys.

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Another object of the invention is to provide a system for allowing an air bag to deploy such that the air bag cover will not propel toward the occupants in such a way as to injuriously impact them.

BRIEF DESCRIPTION OF DRAWINGS

15 FIGURE 1 shows a fragmentary perspective view of the front interior of a vehicle, including instrument panel, wherein the air bag is in its normally concealed state, the skin of the air bag itself forming the cover in accordance with an embodiment of the present invention;

FIGURE 2 shows a fragmentary perspective view of the front interior of a vehicle as shown in Figure 1, wherein the air bag is in its fully inflated and deployed state in accordance with an embodiment of the present invention;

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FIGURE 3 shows a fragmentary front view of an instrument panel, featuring an air bag cover fixedly adhered to the skin of the air bag flush with the surface of the instrument panel in accordance with an embodiment of the present invention;

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FIGURE 4 shows a fragmentary front view of the instrument panel shown in Figure 3, with an air bag in its fully inflated and deployed state, with the air bag cover fixedly adhered to the inflated air bag on the side opposite the passenger, in accordance with an embodiment of the present invention;

5 FIGURE 5 shows a fragmentary side sectional view of the air bag cover shown in Figure 3 and an air bag in its normally concealed and pre-deployment state; and

FIGURE 6 shows a fragmentary side sectional view of the air bag cover and air bag shown in Figure 4.

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BEST MODE FOR CARRYING OUT THE INVENTION

One embodiment of the present invention is shown in Figures 1 and 2. These figures show a perspective view of the front interior 10 of a vehicle 12, including an instrument panel 14, wherein an air bag 16 is in its normally concealed state (Figure 1). A skin 18 of the air bag 16 covers an opening 20 in the instrument panel 14 and is substantially flush with, and blends into, the instrument panel. Upon inflation, the deployment of the air bag is unobstructed and the skin 18 remains and is retained as a part of the inflated air bag.

Another embodiment of the present invention is shown in Figures 3-6. The air bag 16 has a separate cover 34 as a panel fixedly attached or adhered to a portion of the air bag such that when the air bag is in its normally deflated state, the cover 34 is substantially flush and in harmony with the instrument panel 14, Figures 3 and 5. Upon inflation and deployment of the air bag, the air bag cover remains and is retained fixedly adhered or attached to the air bag and moves to a location on the side of the air bag opposite the occupants, Figures 4 (phantom) and 6. This allows the air bag to deploy without obstruction and eliminates the potential for the door or pieces of the door to injuriously impact the occupants.

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WHAT IS CLAIMED IS:

1 1. An occupant protection system for deploying a deployable air
2 bag from a concealed location in a vehicle instrument panel having an opening, the
3 protection system comprising:

4 an air bag normally containable in a deflated condition adjacent the
5 opening and deployable through the opening as a protection for the occupant; and
6 the air bag including an air bag portion for closing the opening when
7 the air bag is deflated, and remaining as a portion of the air bag after the air bag is
8 deployed.

1 2. The occupant protection system of claim 1, wherein the air bag
2 has a skin and the air bag portion is a portion of the skin.

1 3. The occupant protection system of claim 1, wherein the air bag
2 has a skin and the air bag portion is a panel fixedly adhered to the skin.

1 4. In combination, a vehicle having an air bag deployable upon
2 vehicle impact and an occupant protection system for deploying a deployable air bag
3 from a concealed location in a vehicle instrument panel having an opening, the
4 protection system comprising:

5 an air bag normally containable in a deflated condition adjacent the
6 opening and deployable upon vehicle impact through the opening as a protection for
7 the occupant; and

8 the air bag including an air bag portion for closing the opening when
9 the air bag is deflated and remaining as a portion of the air bag after the air bag is
10 deployed.

ABSTRACT OF THE DISCLOSURE

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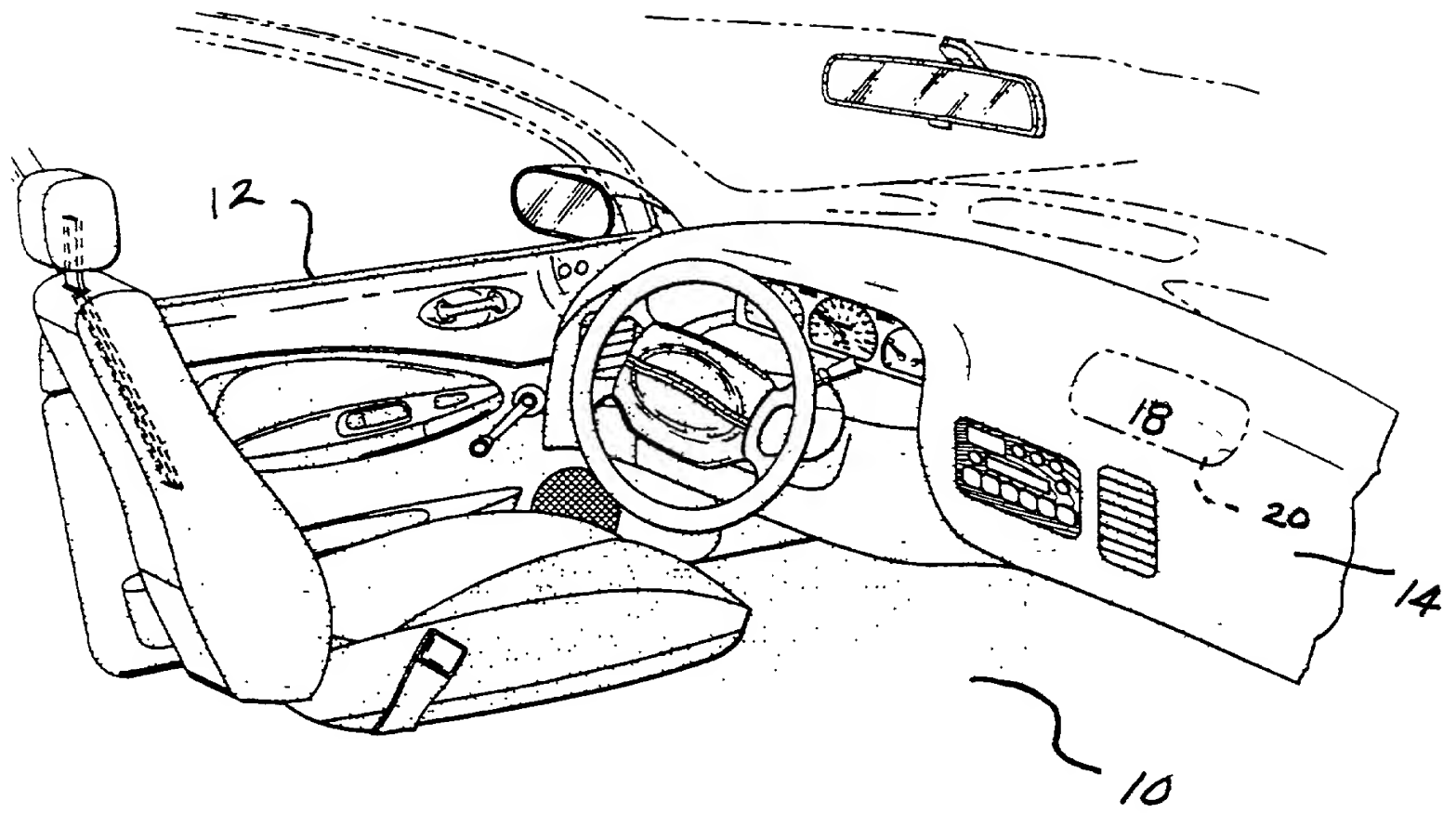


Fig. 1

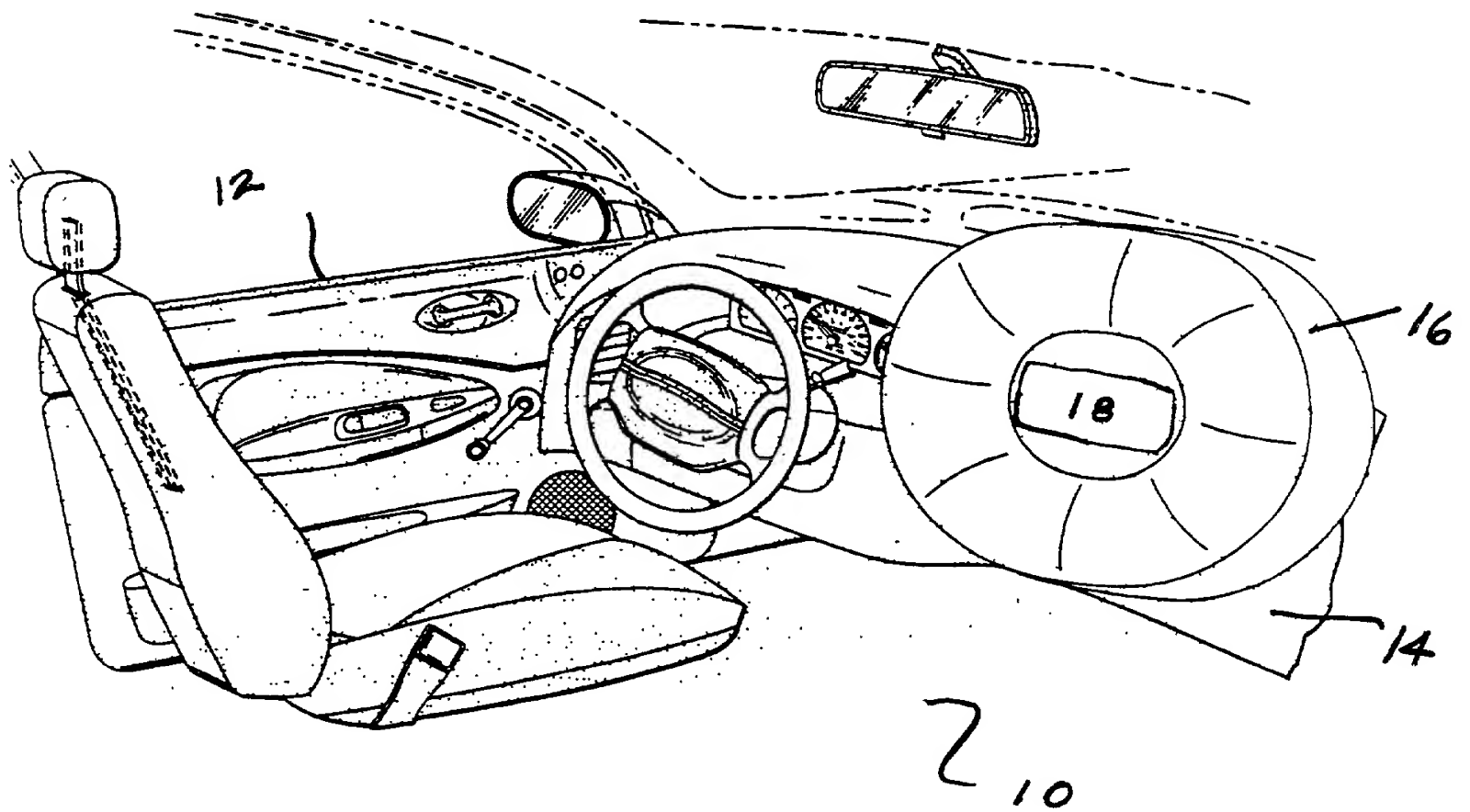


Fig. 2

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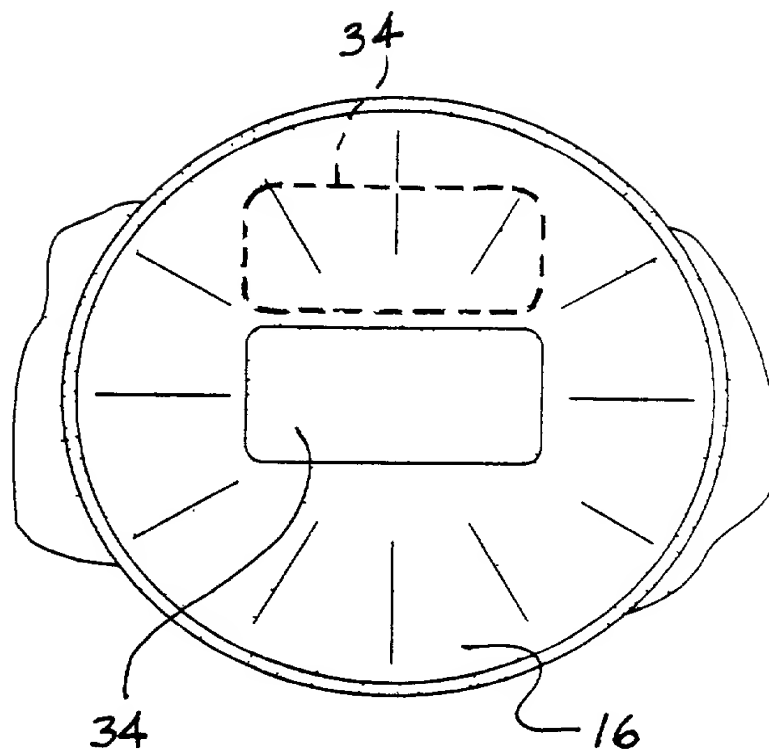


Fig. 4

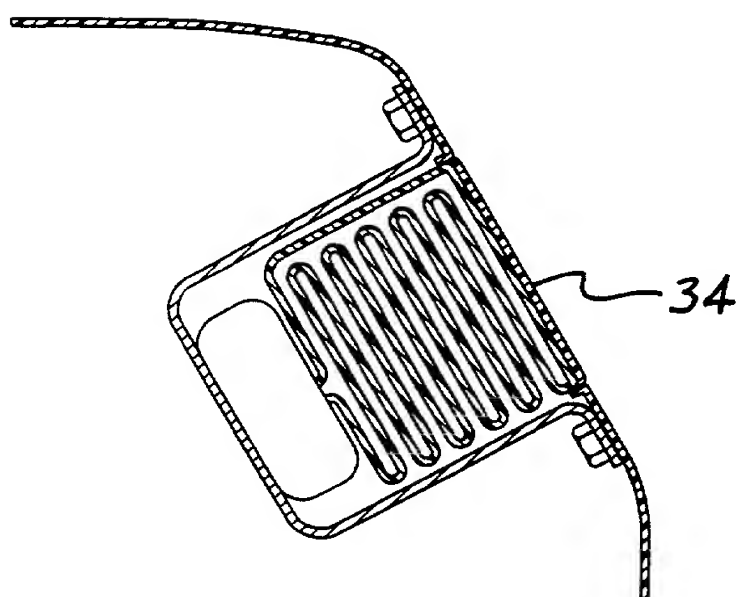


Fig. 5

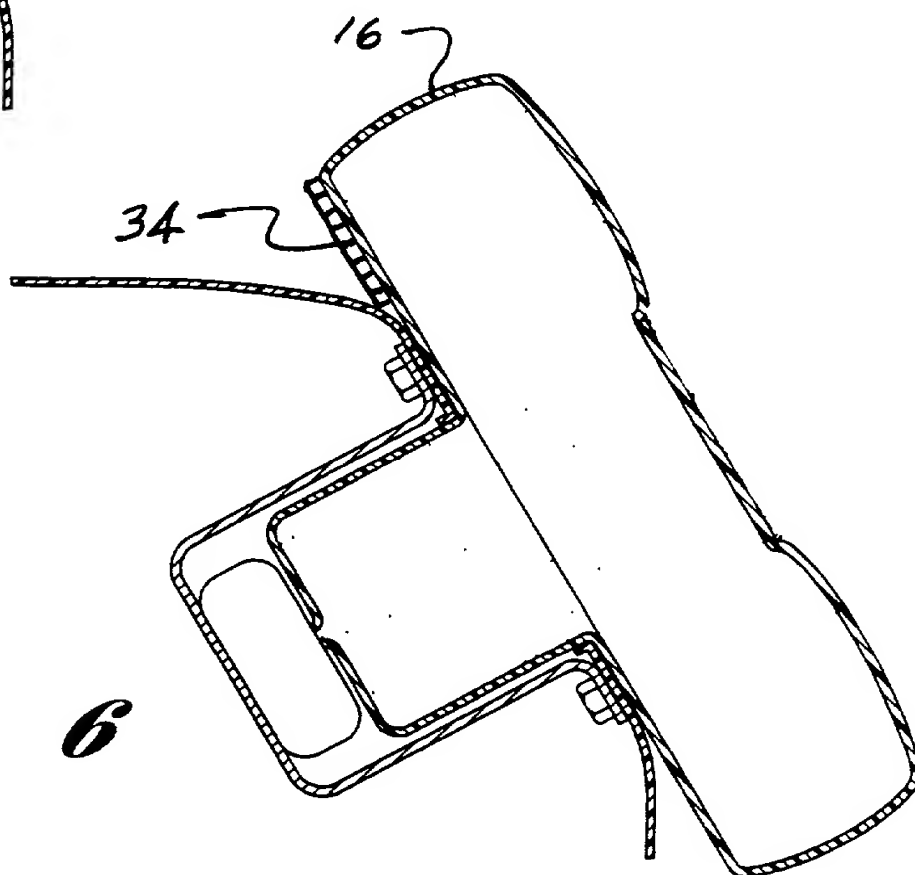


Fig. 6

DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY

Atty. Docket No. VEI0319PUS
First Named Inventor Darius J. Preisler

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

OCCUPANT PROTECTION SYSTEM FOR VEHICLE WITH AIR BAG

the specification of which:

☒ is attached hereto; or
☐ was filed on (MM/DD/YYYY) _____ as U.S. Application Number or PCT International Application Number _____, and was amended on (MM/DD/YYYY) ____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below, and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

<i>Prior Foreign Application Number(s)</i>	<i>Country</i>	<i>Foreign Priority Date (MM/DD/YYYY)</i>	<i>Priority Not Claimed</i>	<i>Certified Copy Attached? (Yes/No)</i>

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

<i>Application Number(s)</i>	<i>Filing Date (MM/DD/YYYY)</i>

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

<i>Application Number(s)</i>	<i>Filing Date (MM/DD/YYYY)</i>	<i>Status: Patented, Pending, Abandoned</i>

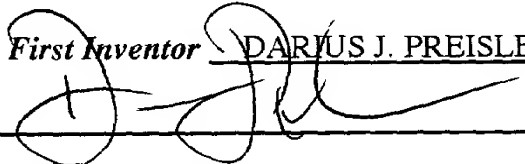
Declaration for Patent Application (cont'd.)Atty. Docket No. VEI0319PUS

I hereby appoint the following registered practitioners to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

Ernie L. Brooks, Reg. No. 26,260; James A. Kushman, Reg. No. 25,634; David R. Syrowik, Reg. No. 27,956; Mark A. Cantor, Reg. No. 30,614; Ralph M. Burton, Reg. No. 17,748; Robert C.J. Tuttle, Reg. No. 27,962; Earl J. LaFontaine, Reg. No. 30,766; Ronald M. Nabozny, Reg. No. 28,648; Thomas A. Lewry, Reg. No. 30,770; John E. Nemazi, Reg. No. 30,876; Kevin J. Heintz, Reg. No. 29,805; William G. Abbatt, Reg. No. 31,936; Donald J. Harrington, Reg. No. 17,427; Timothy G. Newman, Reg. No. 34,228; Frederick M. Ritchie, Reg. No. 18,669; Robert C. Brandenburg, Reg. No. 29,048; A. Frank Duke, Reg. No. 20,937; John M. Halan, Reg. No. 35,534; Jeffrey M. Szuma, Reg. No. 35,700; James R. Ignatowski, Reg. No. 26,741; Frank A. Angileri, Reg. No. 36,733; William G. Conger, Reg. No. 31,209; Sangeeta G. Shah, Reg. No. 38,614; Christopher W. Quinn, Reg. No. 38,274; Robert C. Jones, Reg. No. 35,209; David S. Bir, Reg. No. 38,383; Konstantine J. Diamond, Reg. No. 39,657; James N. Kallis, Reg. No. 41,102; Hugo A. Delevie, Reg. No. 32,688; Ralph E. Smith, Reg. No. 35,474; Michael S. Brodbine, Reg. No. 38,392; Jeremy J. Curcuri, Reg. No. 42,454; Mark D. Chuey, Reg. No. 42,415; John J. Ignatowski, Reg. No. 36,555; Pete N. Kioussis, Reg. No. 41,117; Gigette M. Bejin, Reg. No. 44,027; Stephanie M. Mansfield, Reg. No. 43,773; Mark E. Stuenkel, Reg. No. 44,364; Matthew R. Mowers, Reg. No. 44,956; Raymond J. Vivacqua, Reg. No. 45,369; Lawrence G. Almeda, Reg. No. 46,151; Ginta Kukainis, Reg. No. 46,082; Seth E. Rodack, Reg. No. 45,622; James W. Proscia, Reg. No. P-47,010.

Address all correspondence and telephone calls to David R. Syrowik
at Brooks & Kushman P.C., 1000 Town Center, Twenty-Second Floor, Southfield, Michigan 48075, (248) 358-4400.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole or First Inventor DARIUS J. PREISLERInventor's signature 

Date

7-18-2000Post Office Address 52497 Powderhorn, Macomb, Michigan 48042

Residence

Same as above

Citizenship

U.S.A.**Full Name of Second Joint Inventor** _____

Inventor's signature _____

Date _____

Post Office Address _____

Residence _____

Citizenship _____

Full Name of Third Joint Inventor _____

Inventor's signature _____

Date _____

Post Office Address _____

Residence _____

Citizenship _____

Full Name of Fourth Joint Inventor _____

Inventor's signature _____

Date _____

Post Office Address _____

Residence _____

Citizenship _____